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ABSTRACT

The D. Lerner and W. Schramm model of the role of mass media in national development has influenced most media oriented studies of development for almost two decades. Briefly, the model suggests that the evolution from traditional to modern societies follows a causal path that leads to increased mass media use. The path ends with increased political participation and growth in gross national product (GNP). A study was undertaken to test the validity of the Lerner-Schramm model using new data drawn from the 1970s and from more sophisticated modeling techniques. In addition, three expanded models that incorporate new variables suggested by economists and other theorists--industrial base, physical quality of life, and horizontal media (telephone, mail, and telegraph)--were used. No evidence was found to support the Lerner-Schramm hypothesis. Mass media also had no influence on political participation or on physical quality of life in the expanded models. There was a significant relationship between mass media and GNP growth, though not in the direction suggested by Schramm and others. There was also some evidence showing a relationship between telephone saturation and increased political participation, lending support to Frey's contention that horizontal media may be more influential than other media in loosening government control in less open societies. Results suggest the need for a more thorough examination of the assertion that the key to development is equality of distribution of information and socioeconomic benefits. (Author/FL)

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A RE-EVALUATION OF THE DOMINANT PARADIGM OF COMMUNICATION AND DEVELOPMENT

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Presented to the Theory and Methodology Division, Association for Education in Journalism and Mass Communication, 1984.

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ABSTRACT

A RE-EVALUATION OF THE DOMINANT PARADIGM OF COMMUNICATION AND DEVELOPMENT

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The Lerner and Schramm model of the role of mass media in national development has influenced most media-oriented studies of development for the past two decades. Briefly stated, this model suggests that the evolution from traditional to modern societies follows a causal path starting with urbanization. This in turn leads to increased literacy, which leads to increased mass media use. The path ends with increased political participation and/or growth in GNP. This study tested the Lerner-Schramm model using new data from the seventies and more sophisticated causal modeling techniques. Further, three expanded models, incorporating new variables suggested by economists and other theorists--industrial base, physical quality of life, horizontal media--were tested.

Using the new techniques, no evidence was found to support the Lerner-Schramm hypothesis. Mass media also had no influence on political participation or on physical quality of life in the expanded models. There was a significant relationship between mass media and GNP growth, though not in the direction suggested by Schramm and others. There was some evidence showing a relationship between telephone saturation and increased political participation, lending support to Frey's contention that horizontal media may be more influential than other media in loosening government control in less open societies. Results of this study suggest a more thorough examination of Roger's assertion that the key to development is equality of distribution of information and socio-economic benefits.

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A RE-EVALUATION OF THE DOMINANT PARADIGM OF COMMUNICATION AND DEVELOPMENT

When Daniel Lerner wrote The Passing of Traditional Society in 1958, he was optimistic about the future of developing nations and the role of the media in helping nations "modernize." The late fifties and the sixties saw newly independent nations begin to grapple with the problems of tragile infrastructures and the need to build political and economic institutions. Government planners were faced with a choice between emulating the "big" economies of the industrialized West and a growth strategy that emphasized labor mobilization and small-scale production based on an agrarian economy (Mellor 1976).

Irrespective of the planning strategy chosen, planners did not emphasize the role of the mass media as an institution in development, but focused instead on the more tangible contributors to growth like the manufacturing and service industries, and social catalysts like national integration of diverse cultures. Unlike traditional development planners, Lerner argued that mass communication could both ease and speed the transformation of emerging nations from traditional to modern status. In his seminal study of modernization in the Middle East, Lerner found strong correlations between urbanization, literacy, exposure to the mass media and political participation (1958, 63). The first step in the modernization process, according to Lerner, was urbanization. He hypothesized that once 10 percent of a nation's population became urbanized, a condition he termed as the "take-off stage," literacy and mass media participation would grow. An

intervening variable in this model was an increase in individual empathy, which Lerner said was a function of mass media exposure. Literacy and media use would, in turn, lead to increased political participation. The product would be democratic government, "the crowning institution of the participant society."

The outcome of Lerner's model of modernization was not the pursuit of economic betterment. Six years later Wilbur Schramm modified Lerner's model with the introduction of an economic goal to development. Like Lerner, Schramm was optimistic about the potential role the media could play in the modernization process. The media, he said, "could help speed and ease the long slow social transformation required for economic development, and, in particular, to speed and smooth the task of mobilizing human resources behind the national effort." (1964, 27)

This model of development, first articulated by Lerner and later modified by Schramm, has influenced most mass media-oriented studies of development for the past two decades. A cursory examination of media growth in the sixties seems to support forecasts for media diffusion as postulated by the Lerner-Schramm model, referred to in the literature as the dominant paradigm. (See Figure 1) Schramm speculated that "a conservative estimate is that one-third to one-fourth of all the people in the developing regions now have direct access to radio broadcasts." (Lerner and Schramm 1967, 3) There is evidence of spectacular growth in the mass media in many Third World countries. Of the 144 million radios in developing countries, about 100 million were added between 1963 and 1973. In Latin America, the number of radios more than

doubled; in Africa it tripled; in Asia it more than quadrupled. Growth in other media was less impressive but steady. Newspaper circulation, according to Schramm's analysis of UNESCO data, was growing at a moderate rate. Television was increasing rapidly, although the 1963 starting figure was close to zero. Telephones were growing at about six percent a year; the number of cinema seats had actually declined slightly. He also noted that several Third World countries--India, Brazil, Indonesia and Iran--were about to begin using communication satellites.

Despite this seeming evidence, the dominant paradigm came under attack by critics who questioned the logic of applying a Western-oriented model of democratic institutions and "big" economies to countries with very different political, social and economic perceptions. The criticisms seem justified on a number of counts. Although Third World countries had shown substantial economic growth, this growth was misleading when examined in a global context. The developing countries failed to match the rate of economic growth in the industrialized nations, which resulted in a widening gap between the economic "haves" and the "have-nots." Furthermore, much of the overall economic development in the Third World was diluted by large population increases so that there were little, or even negative, gains. Population growth also affected absolute gains in combating illiteracy. The rate of illiteracy declined steadily, but the population increased so much faster that the total number of illiterates in developing countries was greater in the early seventies than it had been a decade earlier.

In 1976, Rogers distilled and articulated major shortcomings of the dominant paradigm. He noted some world events in the late sixties and early seventies that had caused critics to challenge the assumptions of the paradigm. The first was the increase in environmental pollution, due in large part to heavy industrialization in the West. (127) Second was the "oil blackmail" of Euro-America in 1973, which redistributed wealth from the developed countries to some oil-rich developing nations and demonstrated that the latter could redefine the social situation of international finance. Third, the cessation of China's self-imposed isolation and the formation of the non-aligned movement challenged both Western and Soviet-style development models.

Based on these developments, Rogers rejected the dominant paradigm of Lerner and Schramm and proposed "alternative pathways to development (130)." The main elements in this new concept are:

1. The equality of distribution of information and socio-economic benefits for villagers and the urban poor.

2. Popular participation in self-development planning and execution, usually accompanied by the decentralization of certain of these activities to the village level.

3. Self-reliance and independence in development, with an emphasis upon the potential of local resources.

4. Integration of traditional with modern systems so that modernization is a syncretization of old and new ideas, with the exact mixture somewhat different in each locale.

These were alternatives to the main elements of the dominant paradigm of development, which stressed a) economic growth b)

capital-intensive technology c) centralized planning and d) internal causes of underdevelopment. Economists like Frank (1971) and dependency theorists (Beltran 1975) also criticized the dominant paradigm.

Testing the Dominant Paradigm

In 1958, when Lerner proposed and tested his model for development with data from the Middle East, his analysis was limited to examining correlations among variables, a sophisticated technique at the time. About a decade later, Schramm and Ruggels tested the Lerner model using newer statistical techniques (1967). In a cross-lagged correlation design, they found that urbanization and gross national product both led to literacy; that is, the correlation between urbanization (and GNP) in 1951 and literacy in 1961 was greater than the reverse. Mass media indicators, however, did not show any clear pattern of time order. Problems with the study were high multi-collinearity and cross-lagged correlations that were too similar to infer a directional change.

Earlier, Frey (1973) had used data measured between 1955 and 1960 to test the Lerner model. Using simple correlations he tested the relationship between various communication indicators such as the saturation of newspapers, radio and television, and social and economic indicators such as GNP, urbanization, health care and agricultural labor force. He reported high positive correlations between the two groups of indicators in the range of .6 and .8. Frey also examined the Schramm-Ruggels study, and others (Winham 1970, Alker 1966, McCrone and

Cnudde 1967). He found that none of the studies agreed on a single linkage in the Lerner model (1973).

It is ironic that, as data collection has become more exhaustive and reliable, for example, by agencies like the World Bank and UNESCO, and statistical techniques have become more sophisticated, studies of communication and development have tended to become more qualitative. Few attempts have been made to collect fresh data in the past decade. Hedebro (1982), for example, who took issue with the dominant paradigm in a qualitative argument, cited 1961 UNESCO data, more than two decades old. However, in an update of earlier cross-sectional analyses by Alker and McCrone and Cnudde, Cruise O'Brien (1979) created an index of media and development indicators. But the O'Brien data also represented only one point in time and thus could not be used in models of causality. This paucity in data collection also is reflected in analysis techniques. There have been no studies done to date that combine more sophisticated causal modeling techniques with time-series analysis of fresh data.

PROPOSING A MODIFIED DEVELOPMENT MODEL

Recognizing the limitations of data in the earlier studies, new data were collected by this group of researchers. These data represent two points in time, roughly 1970 and 1980, and allow for the creation of composite indices to measure political, social, economic and media variables. Also, in an attempt to establish causality, path analysis techniques were used to test both the dominant paradigm and to formulate and test a new model incorporating additional factors.

Currently, there are three general perspectives of communication and development based primarily on ideological differences. They are a) a Western democratic model defining political participation as its goal b) a Marxist-oriented model where economic productivity is the outcome and c) a socialist model built on improving the physical quality of life. Earlier studies have examined development models based on only one of these perspectives. Development planners, however have rarely restricted themselves to just one of these approaches to the exclusion of the others, but have tended to borrow from all in varying degrees. A development model then must be flexible enough to accommodate the goals of different ideologies without substantially changing its components, but only assigning varying priorities to these independent variables--urbanization, literacy, GNP and media use.

One of the dependent variables commonly used in communication and development models is gross national product. Schramm, among others, hypothesized that media participation would serve as a catalyst for economic growth. But this view fails to take into account structural differences in economic systems that pursue similar goals. In this study, therefore, countries were entered into the model according to the type of their industrial base--free market or centrally planned. This should present a more realistic and fair test of economic growth as an end-product of modernization or development, regardless of economic ideology.

The concept of communication in past development models has tended to index all forms of media under a common umbrella, or has ignored personal media altogether. While economists like Vaidya (1979),

Saunders and Dickenson (1979) and Cherry (1977) have recognized the importance of horizontal media like telephones, mail and telegrams in spurring economic growth, few communications scholars have (Frey). More recently, a UNESCO special commission recognized the importance of communications systems, both mass media and personal, for economic development (MacBride, 1980):

> Both in its structure and in its content, communication intermingles with, and is dependent on, the economy in many ways. A constant flow of information is vital for economic life. As an element of increasing importance, in all national economies, communication represents a growing segment of a country's GNP and has direct repercussions on productivity and employment (23).

A modified development model, therefore, needs to take cognizance of both vertical and horizontal media. In this study, indices of mass and personal media are included in the proposed modified model. (See Figure 2) The power of this model over previous efforts to explain communications and development is reflected by the inclusion of independent variables like horizontal media, controls for economic type like free-market and centrally controlled industrial bases, current time series data, and more sophisticated analytical techniques.

METHOD

Various sources interpret the composition of the Third World differently. For this study, 125 countries were included in a hybrid econo-political definition. These included all countries in Africa,

except South Africa; Asia, except Japan, Australia and New Zealand; the Middle East, excluding Israel; all countries in the Caribbean and Latin America; and countries in the region commonly referred to as Oceania. Subsequently, 12 countries were dropped because of insufficient data. They are Bhutan, Kampuchea, Laos, Maldives, Mongolia, Solomon Islands, Tonga, Tuvalau, Vanuatu, Vietnam, Western Sahara and Western Samoa.

Among the sources used for data in the two time periods were UNESCO, for data on newspaper circulation, illiteracy, urbanization, number of telephones, pieces of domestic mail and telegrams; the BBC International Broadcasting and Audience Research organization (1970, 1982) for radio and television sets; the World Bank (1980) for GNP; Freedom House (Gastil 1982) for political and civil liberties; and an index of physical quality of life from U.S. Foreign Policy in the Third World: Agenda 1982 (Hansen, 1982). From this data, indices were created for "mass media" from figures on radio sets, televison receivers and newspaper circulation; "horizontal media" from data on domestic mail and telegrams and telephones. Most data from these sources were in raw numbers. These were computed into per capita units for comparative purposes and to diffuse any bias that large countries like China and India would necessarily introduce into the data if raw figures were used. Population figures for the computation of per capita units were taken from UNESCO data.

Two major problems face researchers who attempt to collect data on the Third World. The first is that data reported by agencies like UNESCO are necessarily estimates of bureaucrats in these developing countries that lack sophisticated "book-keeping" techniques. This is

further complicated, for instance in the case of radio receivers, by unlicensed sets which are not reported, but make up a sizeable proportion of the total. Other estimates are made by organizations like the BBC's audience research organization and are independent of official estimates. Consequently, data reported by various sources differ widely. For example, the number of television sets in Algeria in 1981 was reported by UNESCO as 39,000. BBC, however, reported 900,000. Therefore, data from the two time periods in this study were collected from the same source for each variable to avoid the problem cited above.

The second problem is that of missing data. This is particularly true of data on media. Only a few of the countries in this study had complete data and, because of the multivariate procedures involved, which would eliminate any country with missing data, estimates were computed where none was available. A common practice is to replace missing data with the mean for that variable. However, since replacement with the mean affects the variable's correlation with other variables, this would be a serious problem for the model-testing proposed in this study. The most complete data were GNP. The first step involved computation of missing GNP figures for 21 of the 113 countries in the study using a regression equation, since GNP in 1970 and GNP in 1980 were highly correlated (.78).

Since GNP is a non-controversial measure of economic status and since it correlated highly (>.7) with all other variables, countries were then divided into deciles based on GNP for the two time periods. Missing data for a particular variable were then filled in for groups

of countries in these deciles with the mean of that decile. For example, the average literacy rate for all countries could have been used to fill in missing data for Ghana on this variable. Instead, the average literacy rate for countries in the same decile was used.

One of the modifiers proposed in the model to be tested was delineation of countries based on the type of economic system. Classifications of economic type into free market and centrally planned industrial bases were taken from Encyclopaedia of the Third World (1983). Several countries were reported as having a "mixed economy", but the industrial base for such cases was qualified as either "primarily free market" or "primarily centralized planning." These qualifiers were used to assign them to either of the categories.

RESULTS

Before we examine the various models tested in this study, it might be useful to discuss briefly the creation of indexes for mass media, horizontal media and political participation. Data were collected so as to ensure that we had what we felt were multiple items for each of these indexes. We planned to create a mass media variable for each wave of the panel from an index of radio, television and circulation figures (per thousand people) from each wave. The horizontal media variables (again, one for each time point) were to be constructed from mail, telegram and telephone figures (per thousand people) from each wave. Finally, the political participation variables were to be built from Freedom House figures on political and civil liberties at each

time point (1970 and 1980).

Six factor analyses were run (one for each hypothesized index) to check the dimensionality of each set of index items for each wave. The results of these analyses are shown in Figure 3. Index items loaded as expected on the mass media and political participation factors. All three horizontal media items from 1970 loaded on the same factor, however, the 1980 telephone measure emerged as the most highly loaded variable on a second factor. For this reason, the telephone item was dropped from both the 1970 and the 1980 factor analyses. Figure 3B shows factor loadings on the horizontal media factors with the telephone item removed from both analyses. We decided to treat the number of telephones as a separate variable. Indexes were computed from factor scoring coefficients (not shown) for each of the six factors.

Testing the Lerner and Schramm Models

The traditional method for testing longitudinal panel data has been cross-lagged correlation. This analysis technique, used, incidentally, by Schramm and Ruggels in a previous test of the effect of mass media on national development, involves examination of the correlations between pairs of variables over time. So, for example, we might look at the relationship between urbanization and illiteracy (Lerner and Schramm were interested in the effects of literacy. Since we have the opposite measure, we would expect any effects to be in the direction opposite that predicted in the Dominant Paradigm) over time. As Figure

4A shows, cross-lagged correlation would require that we look at the correlation between urbanization and illiteracy in 1970; at the correlation between urbanization and illiteracy in 1980; at the correlation between urbanization in 1970 and urbanization in 1980; at the correlation between illiteracy in 1970 and illiteracy in 1980; and then at the crossed lags, or the urbanization-literacy correlations across time. Then, by comparing correlation coefficients, we would make a decision about the possibility of a causal relationship from urbanization to literacy, as predicted by Lerner.

Such an analysis, however, might be misleading. Note that all the correlations in Figure 4A are significantly greater than zero. Further, the cross-lagged correlation between urbanization in 1970 and illiteracy in 1980 is greater, though only slightly, than the opposite cross-lag. It might be possible, from this analysis, to conclude that there is a significant causal relationship here, in which urbanization leads to a reduction in illiteracy. There is a problem, however, in basing such an assumption on a simple zero-order correlation.

As Alwin and Hauser (1981) have pointed out, a zero-order correlation may be thought of as a "total association" between two variables. This associate consists of three different components: direct effects, indirect effects, and unanalyzed effects. A direct effect measures the direct causal relationship from one variable to another. Indirect effects "are those parts of a variable's total effect which are transmitted by variables specified as intervening between the cause and effect of interest in a model (Alwin and Hauser, 1981, p. 126-7)." Unanalyzed effects are due to unmeasured spurious

relationships. Alwin and Hauser have shown that the direct effect of one variable on another may be measured by regressing the effect variable on all causal variables and then examining the regression coefficient for the causal variable in question. If the direct effect in question is significant, indirect effects may be sorted out, and added to the direct effect to give an estimate of the total causal effect (for a detailed description of decomposition of effects see Alwin and Hauser, 1981).

Thus the cross-lagged correlation between urbanization in 1970 and illiteracy in 1980 may comprise a direct effect (a pure causal effect), a set of indirect effects due to the significant intervening correlations involving the other two variables in the model, and an unanalyzed effect. It may be then, that the seemingly high cross-lagged correlation can be explained almost entirely by the fact that urbanization in 1970 is correlated with urbanization in 1980 and with illiteracy in 1970, and that both of the latter variables are correlated significantly with illiteracy in 1980. On the other hand, a significant direct effect along the cross-lag would satisfy the time-order criterion of causality.

Figure 4B tests the relationship between urbanization and illiteracy, using the Alwin and Hauser technique. The path coefficients from urbanization in '70, illiteracy in '70 and urbanization in '80 are standardized coefficients (Beta weights) from a regression of illiteracy in '80 on all three independent variables. Now we see why zero-order correlation alone might have misled us. When we control out the portion of the cross-lagged correlation due to the

correlations among independent variables, we fail to find significance for the cross-lagged path. Thus we cannot establish time-order and we are unable to confirm the first step of Lerner's model of development. (Only the paths across time are of interest here. Significant within-wave paths may not be considered evidence of causality, because time-order cannot be established.)

A full test of Lerner's model would really require four waves of panel data. Such a data set would permit us to test whether urbanization at time one leads to literacy at time two; which, in turn, leads to media use at time three; which, finally, leads to political participation at time four. Though two waves of data do not permit a test of the full causal chain hypothesized by Lerner, they do allow us to look at pairs of variables. Figure 4C then, tests for a possible causal relationship of decreasing illiteracy on mass media growth. Figure 4D tests for a causal relationship of mass media growth on political participation. As the figures illustrate, we were unable to confirm any link in Lerner's causal chain. The cross-lagged direct effects from illiteracy in 1970 to mass media in 1980, and from mass media in '70 to political participation in '80, are both small and non-significant.

We also tested Schramm's suggested end-product of development, growth in the gross national product. Here we found, as did Schramm and Ruggels, a significant cross-lag. The sign of the path coefficient from mass media in 1970 to GNP in '80, however, was in the "wrong" direction. Oddly, mass media growth appeared to be a negative predictor of GNP growth. This perplexing finding will be discussed at

greater length in the conclusions.

Failing to confirm the Dominant Paradigm via a simple step-by-step process, we decided to examine three enhanced models, in which we tested the joint effects of urbanization, illiteracy and mass media (from the Dominant Paradigm) on each of three dependent variables (see below). We also added three new variables to each model: horizontal media (mail and telegraph per thousand people), number of telephones in a country and economic type (a dummy variable, in which a centrally planned economy was coded as 0 and a free-market economy was coded as 1). The first two new independent variables were added in recognition of work by economists (Vaidya, 1979; Saunders and Dickenson, 1979; Cherry, 1977) who have suggested that various horizontal media may have an important effect on development. As pointed out in the introduction, the third new independent variable, economic type, was added as a control taking into account the possible effect of structural differences in economic systems that pursue similar goals. The dependent variables were suggested by three different ideological views of what the goal of development should be. Western democratic thinkers suggest that the end-product of development is full political participation; Marxists suggest that the end-product is economic productivity; and socialists suggest that the end-product is physical quality of life. These dependent variables may seem to over-simplify complex strategies of development, but they do tend to reflect the major threads of the three models. For example, although physical quality of life is arguably one goal of any system, it is more likely to be used as a criterion measure of development in the socialist

model.

Figure 5 shows the test of the enhanced western democratic model of the role of communication in development, with political participation as the dependent variable. As with the simpler models in Figure 4, we are most interested here in the cross-lagged paths. These paths, if significant, would demonstrate a direct effect of the causal variable over time. None of the cross-lagged paths in this model are significant, although number of telephones in 1970 was close ($p=.06$). Likewise, economic type does not appear to have a significant effect on political participation. We are thus unable to confirm the western democratic model.

Figure 6 illustrates an enhanced version of the Marxist model of the role of communication in development, with GNP growth as the goal. As in the simpler test of Schramm's model, we found a significant effect for mass media over time. Again, however, the sign was negative, suggesting that an increase in mass media per thousand people leads to a decrease in GNP (measured per capita, although standardization of regression coefficients removes the need to consider units of measurement as an issue). Horizontal media and number of telephones did not appear to have a significant effect over time. Economic type was also non-significant.

Finally, Figure 7 tests the enhanced socialist model of the role of communications in development, with physical quality of life as the end-product. There were no significant cross-lagged effects here, and economic type was again non-significant.

In summary, by using more up-to-date techniques for estimating

causal effects, we were unable to confirm the Lerner model of the role of mass media in development. We did find an apparent causal effect of media growth on GNP, as suggested by Schramm, but it was in the counterhypothetical direction. Tests of three enhanced models of the role of media in development failed to find significant effects, over time, for any communication variable, except mass media on GNP (again in the counterhypothetical direction). It appears, based on these measures at least, that no communication variable tested has a causal effect on any of the three theoretical end-products of development. Indeed, the only significant causal relationships we could find (that is, relationships involving a time lag) were between each dependent variable and itself as measured in the previous wave.

DISCUSSION

Thus, we have tested three alternative models of the role of media in national development. As proposed, these tests were performed at two levels of complexity. The first series of tests examined the simple causal relations proposed by Lerner and Schramm. The second series looked at the simultaneous effects of literacy, urbanization and mass media use on political participation and per capita gross national product. The second series also added three new independent variables--horizontal media (domestic mail and domestic telegrams), telephone saturation and economic type (free market economy, centrally planned)--and a new dependent variable, physical quality of life, which represented the socialist-oriented goal of development.

In the initial series of tests we found no support for the Lerner model, which suggests a causal chain from urbanization through literacy

to mass media and finally, to political participation. As suggested by Schramm, we substituted GNP for political participation as the end product. We found a significant effect of mass media use on GNP, though the effect was not in the direction suggested by Schramm and Ruggels. Any discussion of this finding must be highly speculative, but two possible explanations are suggested. First, data for the Schramm-Ruggels study were from the sixties, a full decade before the data for this study were collected. The sixties witnessed tremendous growth, both in radio and newspapers, while television was still in the future for much of the Third World. The seventies saw a levelling off, or in some cases even a decline, in newspaper circulation; radio showed growth, but not at the level it had in the sixties; meanwhile, television began to experience rapid growth. Thus the perplexing effect of mass media on GNP may be an artifact of differential media growth. This should be tested by looking at the media individually.

Second, we must remember that both mass media and GNP are per capita measures in this study. As Rogers pointed out, the "oil blackmail" that characterized the seventies may have significantly dampened real GNP growth in non-oil producing developing countries. At the same time, population increased dramatically, as did mass media. Therefore, the seeming negative relationship between mass media and GNP may be an artifact of per capita increase in the first and a decline in the other.

Our next step was to examine enhanced models based on the three theological perspectives discussed in the introduction. A test of the Western democratic model, with political participation as its

end-product, produced no significant cross-lags, although telephone saturation approached the criterion level for significance ($p=.05$). This provides mild support for Frey's argument that telephones may enhance interaction among people, as this form of communication is probably the most difficult to monitor. Thus the relationship between telephone saturation and political participation should be examined more closely.

In the enhanced Marxist-oriented model, with GNP as the end-product, mass media use again appeared significant, but not in the direction suggested. The possible explanations of this are discussed above.

Finally, we tested the socialist-oriented model, with physical quality of life as the end-product, and found no evidence of a mass media effect.

The new variables introduced in the enhanced models were non-significant in all three cases (again, telephone saturation approached significance in one test).

The precise role of communication in national development is still an open question. However, we find no support, based on data from the seventies, for the dominant paradigm proposed by Lerner and Schramm. We suggest that Rogers' "alternative pathways to development," stressing <u>equality</u> of distribution of information and socio-economic benefits, should be given serious consideration. To date, all tests of media and national development have focused on numbers of media units rather than their actual distribution among all sectors of the population. This might be the key in determining the role of media in

the transition from traditional to modern societies. However, until developing countries employ more sophisticated and reliable data gathering techniques that can assess whether most of the media units are owned or consumed by a small wealthy portion of the population, rather than being economically available to the majority -- or whether the media are concentrated in urban areas rather than being geographically widespread -- it will be virtually impossible to estimate with any accuracy what the actual distribution of media units is. Consequently, determining what impact the media have on political, economic and social development will remain a difficult puzzle to solve.

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FIGURE 1:

The Lerner-Schramm Model of National Development

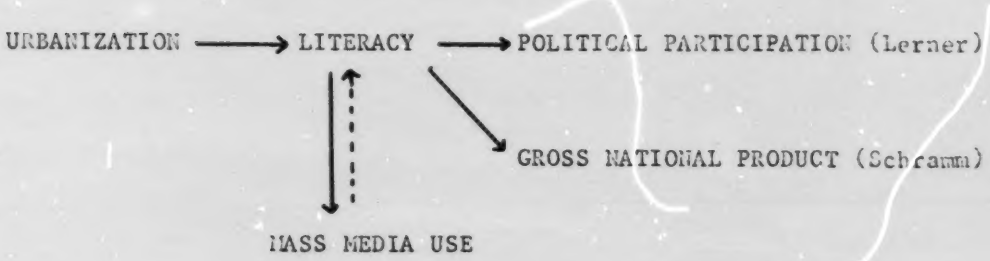


FIGURE 2:

Proposed Expanded Model of Communication and Development

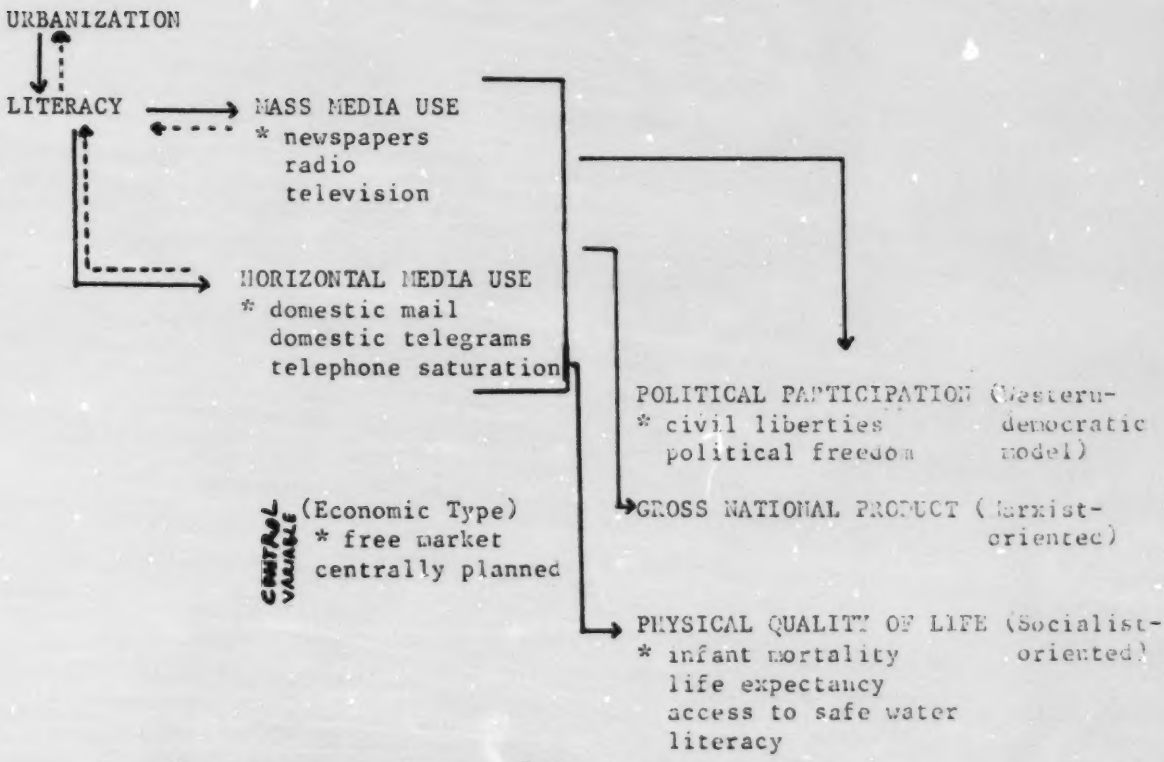


FIGURE 3

Factor Analyses Used to Create Indexes
(Principal Components Method)

Figure 3A
Mass Media Indexes

	1970	1980
	Mass Media Factor	Mass Media Factor
Radios/thousand	.8791	.9193
Televisions/thousand	.8956	.9404
Circulation/thousand	.8259	.8816
Eigenvalue	2.26	2.51

Figure 3B
Horizontal Media Indexes

	1970	1980
	Horizontal Media Factor	Horizontal Media Factor
Mail/thousand	.8187	.7253
Telegrams/thousand	.8187	.7523
Eigenvalue	1.74	1.05

Figure 3C
Political Participation Indexes

	1970	1980
	Political Participation Factor	Political Participation Factor
Political Liberties	.9511	.9526
Civil Liberties	.9511	.9526
Eigenvalue	1.81	1.91

Note: Each factor shown above was computed in an individual factor analysis (Principal Components technique) using a unique set of variables. Indexes of the same variables in different years are shown together only for the convenience of the reader. Thus, in Figure 3A, the 1970 Mass Media factor was calculated in one analysis from 1970 radio, television and circulation figures. The 1980 Mass Media factor was calculated in a separate analysis from 1980 radio, television and circulation figures.

FIGURE 4

Tests of the Original Lerner and Schramm Models

Figure 4A

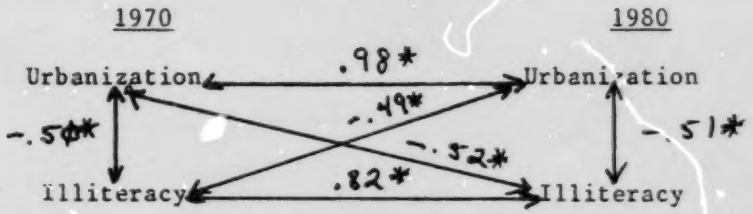


Figure 4B

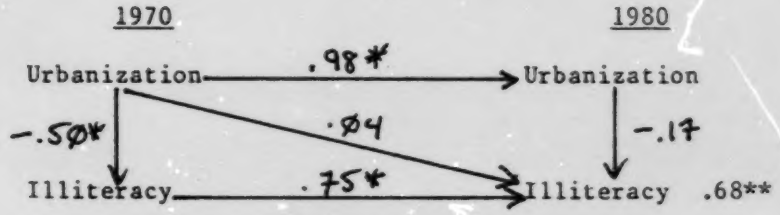


Figure 4C

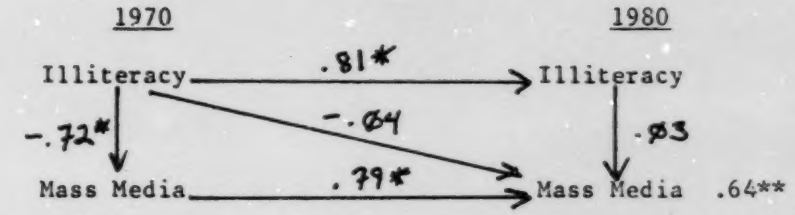


Figure 4D

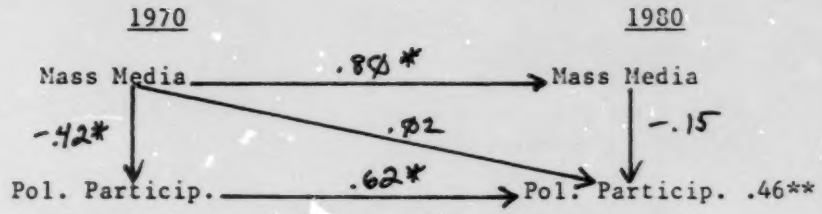
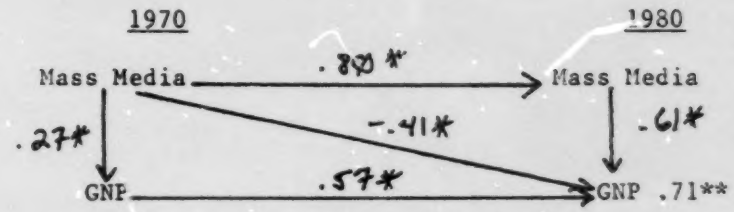


Figure 4E



Note: Path coefficients in all these models are standardized regression coefficients.

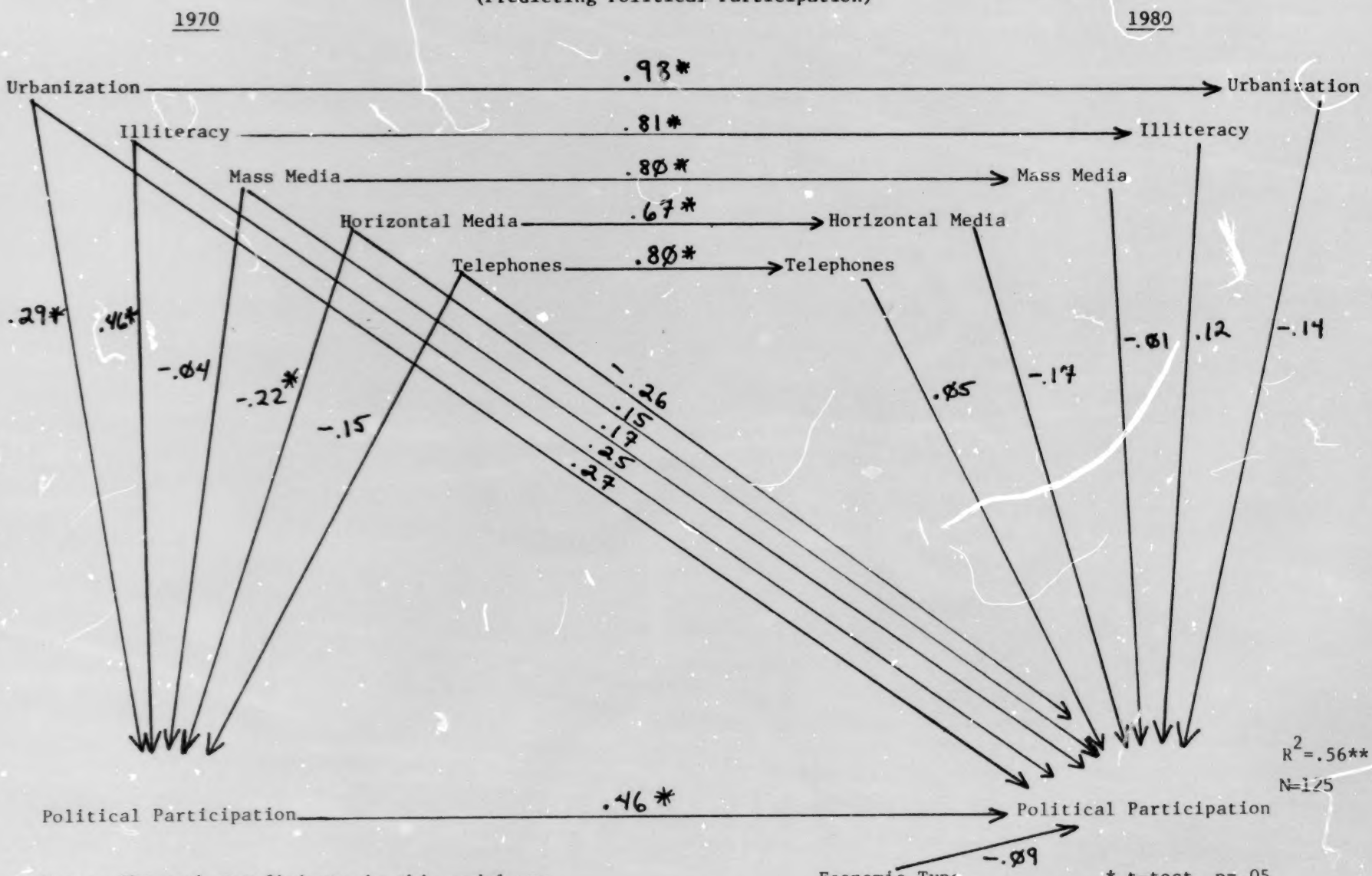
* t-test significant at p=.05

** Figures to the right are R-Squares, all of which are significant at p=.05.

N=125

FIGURE 5

Enhanced Western Democratic Model
(Predicting Political Participation)

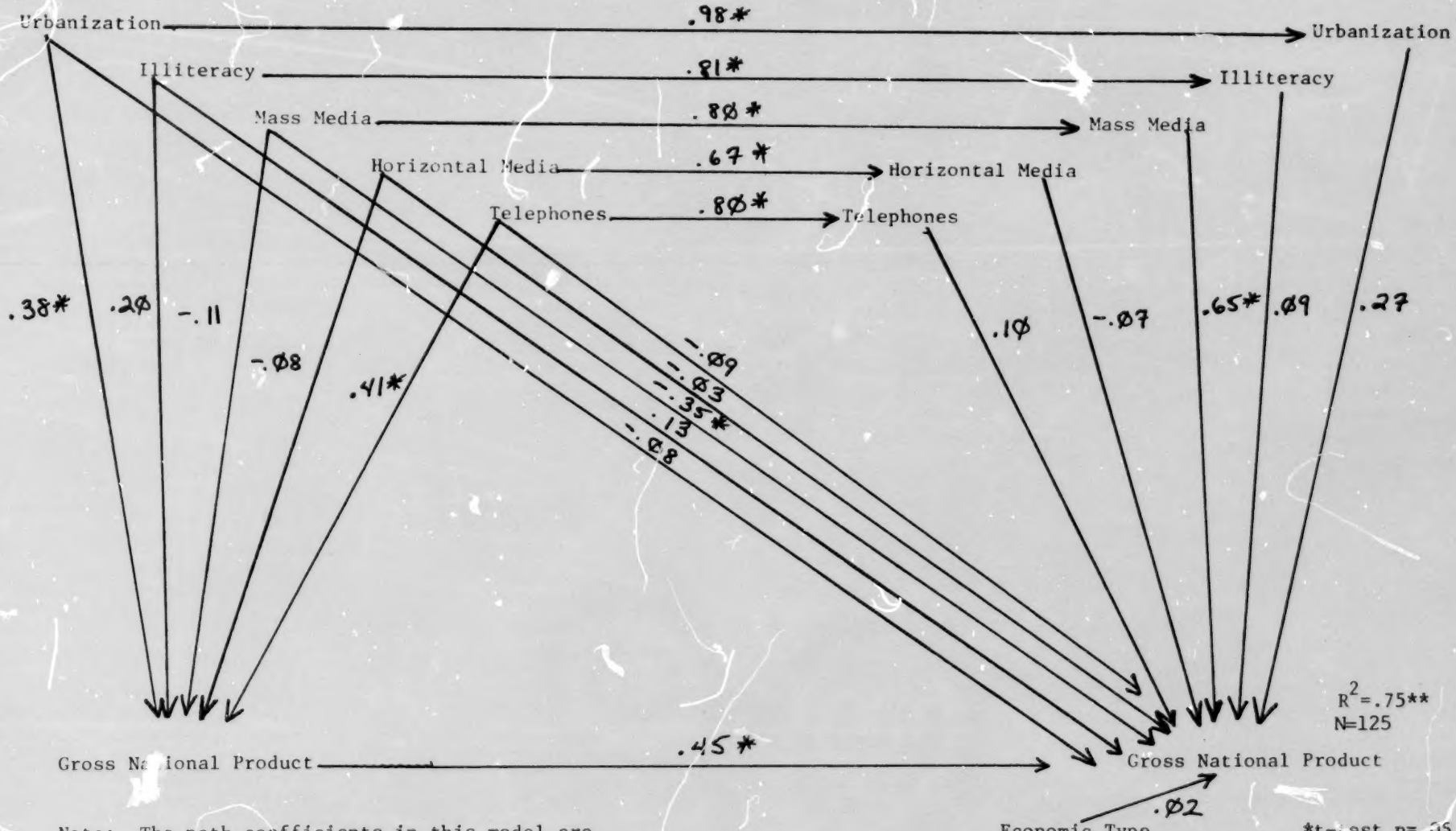


Note: The path coeeficients in this model are standardized regression coefficients.

* t-test, p=.05
** F test, p=.05

FIGURE 6

Enhanced Marxist Model
(Predicting Gross National Product)

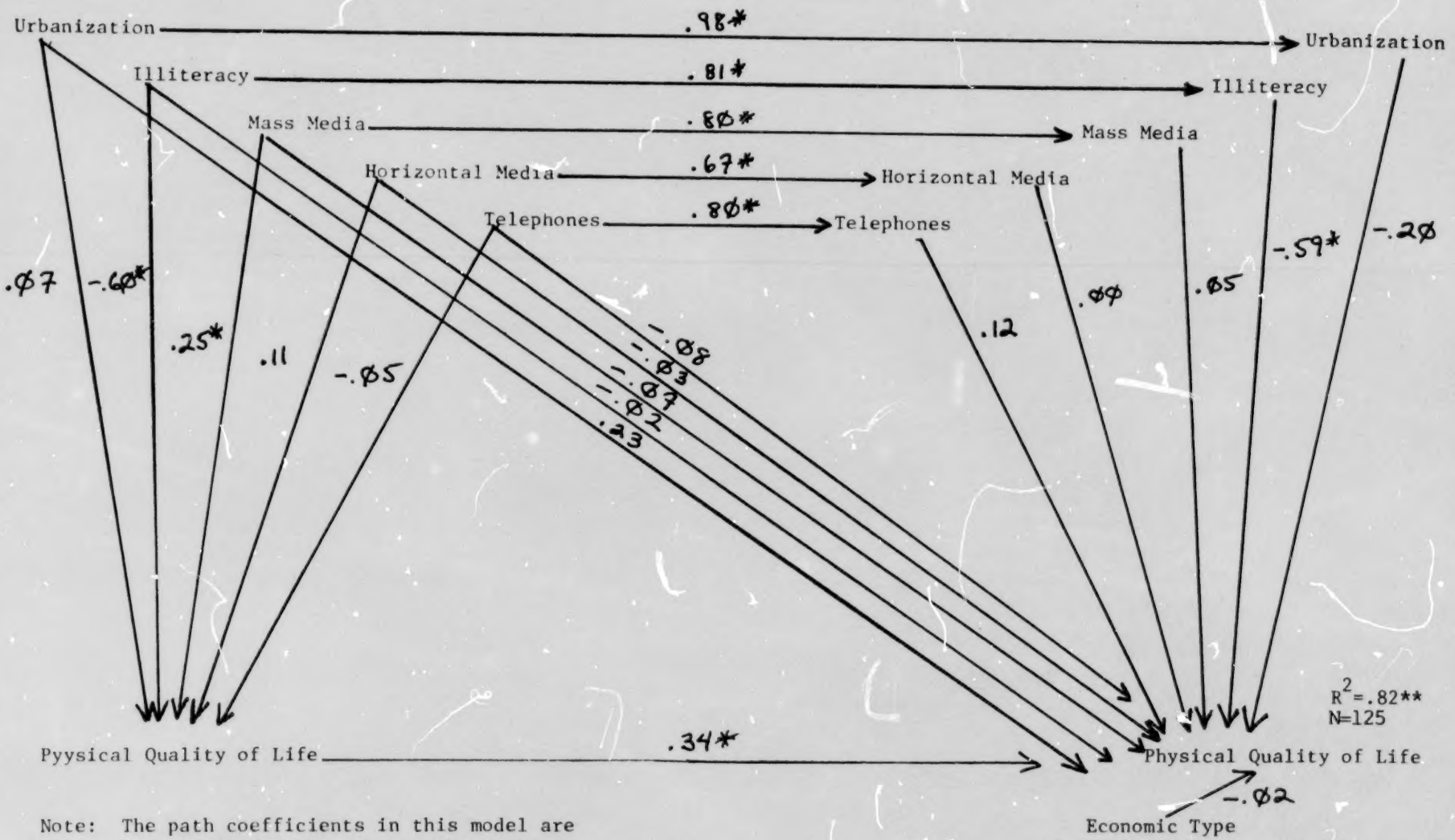


Note: The path coefficients in this model are standardized regression coefficients.

*t-test p=.05
**F test p=.05

FIGURE 7

Enhanced Socialist Model
(Predicting Physicial Quality of Life)



Note: The path coefficients in this model are standardized regression coefficients.

*t-test, p=.05
**F test, p=.05